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Part IV

Environmental Protection Agency

Primary Aluminum Plants; Availability of Final Guideline Document

ENVIRONMENTAL PROTECTION AGENCY

[FRL 1410-7]

Primary Aluminum Plants; Availability of Final Guideline Document

AGENCY: Environmental Protection Agency (EPA).

ACTION: Notice of availability of final guideline document.

SUMMARY: This action establishes emission guidelines and compliance times for State environmental protection agencies to use in establishing standards of performance to control fluoride emissions from existing primary aluminum plants. Federal standards of performance for the control of fluorides emitted from new primary aluminum plants have been promulgated; the Clean Air Act now requires the Administrator to develop emission guidelines and compliance times for existing plants of the same type. In addition, the Act requires the States to develop their own regulations for the control of fluorides from existing primary aluminum plants. The intended effect of the guidelines is to aid the States in developing their own regulations.

DATES: State plans providing for the control of fluoride emissions from existing primary aluminum plants are to be submitted to the Administrator on January 19, 1981. The Administrator will take action to approve or disapprove the plan, or portions of it, within 4 months of this date, or until May 18, 1981.

ADDRESSES: Copies of the final guideline document may be obtained from the U.S. EPA Library (MD-35), Research Triangle Park, N.C. 27711, telephone (919) 541-2777. Please refer to Primary Aluminum: Guidelines for Control of Fluoride Emissions From Existing Primary Aluminum Plants (EPA 450/2-78-049b).

The final guideline document, public comments on the proposed guidelines, and EPA responses to the comments may be inspected or copied at the Public Information Reference Unit (EPA Library) Room 2922, 401 M Street, S.W., Washington, D.C. 20460.

FOR FURTHER INFORMATION CONTACT:

Mr. Stanley T. Cuffe, Chief Industrial Studies Branch, Emission Standards and Engineering Division (MD-13), Environmental Protection Agency, Research Triangle Park, N.C. 27711, telephone number (919) 541-5295.

SUPPLEMENTARY INFORMATION:

Summary of Guidelines

The guidelines are not expressed as emission limitations. They are specific to each of the four aluminum reduction cell types, and are presented as average fluoride control efficiencies expected from the application of certain recommended control technologies that are applied as new retrofits to existing plants. These control technologies are based on effective collection of emissions, followed by efficient fluoride removal by dry scrubbers or by wet scrubbers. Many existing plants will be able to achieve the guideline efficiencies with little or no improvement to their control systems. A few plants may require installation of reduction cell hooding, or primary or secondary control systems. The guidelines also specify a compliance time of 3 years, which will normally be adequate for installation of the equipment needed to achieve the guidelines. In addition, compliance testing is not specified.

Fluorides are considered welfare-related pollutants in that they adversely affect vegetation and livestock, but adverse effects on human health have not been demonstrated. The States, therefore, have more flexibility in weighing the guidelines against such factors as plant location local community employment, and the remaining useful life of an existing plant than is provided for pollutants that may affect public health.

Background

In accordance with section 111 of the Clean Air Act, standards of performance for total fluoride and visible air emissions from new, modified, or reconstructed primary aluminum plants were promulgated on January 26, 1976 (41 FR 3826).

Work on development of the guideline document for existing plants (see "Miscellaneous") was initiated in January 1973, and an early draft was reviewed with the National Air Pollution Control Techniques Advisory Committee (NAPCTAC) on September 5, 1974. As a result of comments by the Committee members and by representatives of the aluminum industry, the scope of the EPA investigation was expanded, and the guidelines document was revised. Fluoride emission data were obtained from most of the existing primary aluminum plants, along with fluoride evolution rates from the reduction cells, existing plant emission controls, and fluoride collection and removal efficiencies. A revised draft was reviewed with NAPCTAC on August 22, 1978. After some minor revisions, notice of availability of the draft guideline document was published in the **Federal Register** on April 11, 1979 (44 FR 21754). The public comment period for the draft guideline document ended on June 11, 1979. The rationale for the guidelines appears in the final guideline document.

Public Comments

When the draft guideline document was announced, the public was invited to submit written comments. Eight letters of comment were received—five from manufacturers of primary aluminum, two from Federal agencies, and one from a State. These comments are briefly discussed below.

Two commenters were concerned that the document gave insufficient emphasis to the effects of fluorides on agricultural crops and forests, and on fish and wildlife, respectively. No data were received on the latter two receptors. However, the document has been revised to stress that most existing primary aluminum plants are situated in agricultural areas, and a book picturing fluoride damage to plant leaves has been added to the cited references. If relatively small amounts of fluoride reach water courses, EPA believes that the fluoride is precipitated as the rather insoluble calcium fluoride. Although the guidelines are based on technology and costs in accordance with the Clean Air Act, the States are free to rely on welfare effects in developing standards of performance more stringent than the guidelines.

Two commeners were concerned that the 75 percent removal efficiency for secondary roof scrubbing was too high and that low loadings entering the secondary scrubber—such as 2 pounds of fluoride per ton of aluminum—have resulted in only 50 to 70 percent removal efficiencies. The EPA knows of no plant with so low a secondary loading. The guideline document, however, presents data on five U.S. plants that actually had the much higher loadings to the secondary scrubber of 5.7 to 8 pounds of fluoride per ton of aluminum, which indicates that high loadings are common. Four of these plants achieved secondary scrubbing efficiencies of at least 75 percent. However, the 75 percent guideline efficiency is intended to apply to new retrofits and not necessarily to existing scrubbers, and some existing scrubbers may not be able to achieve this efficiency. If, as one commenter indicated, a plant already having secondary control is able to improve its hooding efficiency from the guideline of 80 percent to approach 90 percent, the magnitude of the overall plant emission reduction should be taken into account by the control official

and balanced against costs of improved secondary control and the residual fluoride problem.

Another commenter believed that single-number efficiencies were inappropriate as guidelines, and urged a range of recommended efficiencies for hooding and for the other fluoride capture and removal devices. However, hooding efficiencies are already the best available at most U.S. plants, and they meet the guidelines: The guideline efficiencies should reflect this fact and should not be set to accommodate one or two atypical plants. The States may take into consideration the remaining useful life of a plant. Where a facility contains both old and new cells, it may be reasonable to apply somewhat less stringent standards to the old. A second comment from the same source requested that EPA formally advise the States of the flexibility permitted in compliance sampling and analytical procedures. Installation of Method 14 sampling ductwork may be unreasonably costly on some existing plants; therefore, EPA does not specify compliance testing procedures. Such testing is to be determined by each State on a case-by-case basis, taking costs into account. A third comment argued for control of the welfare-related fluroride pollutant at a reduced level, according to local conditions. The guidelines document already stresses that States will have substantial flexibility to consider many factors on a case-by-case basis in making plans for control of existing primary aluminum plants. A fourth comment was that some allowance for control equipment downtime should be given when determining compliance. Compliance with guidelines is normally determined through performance tests under representative conditions. The initial performance test and subsequent performance tests should insure that equipment is installed which will permit the guidelines to be attained, and that such equipment is not allowed to deteriorate below this capability. A final recommendation by this commenter urged EPA to increase the 2½-year average compliance time that was suggested for adding a retrofit control system. Among the reasons given was that the time requirement for financing the pollution control system was significant and was not specifically mentioned in the document. Because EPA recognizes the need for financing time, and because 5 of the 8 actual plant retrofits that are cited and priced in the document were installed in 3 years or less, EPA has adjusted the average retrofitting time upward to 3 years for a typical case.

A commenter whose company operates cells of low fluoride-evolution rate complained that the guidelines would require his old plant to restrict emissions to about 20 percent less than those allowable for a new plant. This fear is unfounded, because the guidelines have a different basis from the new source performance standards (NSPS). The latter set emission limits not to be exceeded, while the calculated emissions that result from applying the guidelines are averages only. In addition, new cells that will become subject to new source performance standards will be designed for improved current efficiency and will probably have cell fluoride evolution rates considerably in excess of the cell evolution rates in most existing plants. It will be easier to achieve guideline efficiencies from existing cells than to meet emission limits for new cells that have much greater uncontrolled emission rates. It can, therefore, happen that an occasional old plant may have a lower guideline fluoride emission rate than a new plant subject to NSPS; but such a rate will not be unreasonable to attain.

Another commenter stated that particulate and fluoride emissions control in anode bake plants is well demonstrated and cited the use of wet electrostatic precipitator (ESP) or dry scrubber controls. The document was therefore reworded to emphasize the availability of this technology. He also cited the growing problem of sulfur dioxide evolution, and believed that the document should address sulfur dioxide control and the impact of fluoride control devices on its emission to the atmosphere. Control of particulates and sulfur dioxide is achieved by NSPS and not by section 111(d) of the Clean Air Act. The EPA will consider sulfur dioxide emissions during the next NSPS review study of the primary aluminum industry. If this study reveals an important sulfur dioxide problem and a feasible emission control, steps will be taken to control sulfur dioxide. In the same vein, specific control of particulate matter, rather than incidental control, may later be investigated, as was recommended by this commenter. The same commenter also pointed out that particulate roof emissions are significantly affected by alumina ore charging and cell hopper loading designs and operating practices. The guideline document text has been adjusted to emphasize these facts.

Miscellaneous

The Clean Air Act applies to three general categories of pollutants emitted from stationary sources. The first category consists of pollutants (often referred to as "criteria pollutants") for which air quality criteria, national ambient air quality standards, and State implementation plans are established under sections 108–110 of the Act. The second category consists of pollutants listed and controlled as hazardous pollutants under section 112 of the Act.

The third category consists of pollutants that are (or may be) harmful to public health or welfare but are not or cannot be controlled under sections 108–110 or 112. Section 111(d) requires control of existing sources of such pollutants whenever standards of performance (for those pollutants) are established under section 111(b) for new sources of the same type. For convenience of reference, such pollutants are referred to as "designated pollutants." Standards of performance for fluoride emissions from new primary aluminum reduction plants were promulgated on January 26, 1976 (41 FR 3826); therefore a guideline document has been prepared for control of fluoride emissions from existing primary aluminum reduction plants and is being made available to the public.

Subpart B of 40 CFR Part 60 sets forth the procedures and requirements for submittal of State plans for control of designated pollutants from designated facilities under section 111(d) of the Act. A summary of Subpart B and a discussion of the basic concepts underlying it appear in the preamble published in connection with its promulgation (40 FR 53340) November 17, 1975. In brief, Subpart B provides that after a standard of performance applicable to emissions of a designated pollutant from new sources is promulgated, the Administrator will publish a draft guideline document containing information pertinent to the control of the same pollutant from designated (i.e., existing) facilities. He will also publish a notice of availability of the draft guideline document, and invite comments on its contents. After publication of a final guideline document for the pollutant in question, the States will have 9 months to develop and submit plans for control of that pollutant from designated facilities. Within 4 months after the date for submission of plans, the Administrator will approve or disapprove each plan (or portion thereof). If a State plan (or portion thereof) is disapproved, the Administrator will promulgate a plan (or portion thereof) within 6 months after

the date for plan submission. These and related provisions of Subpart B are basically patterned after section 110 of the Act and 40 CFR Part 51 (concerning adoption and submittal of State implementation plans under section 110).

As discussed in the preamble to Subpart B, a distinction is drawn between designated pollutants which may cause or contribute to endangerment of public health (referred to as "health-related pollutants") and those for which adverse effects on public health have not been demonstrated (referred to as "welfare-related pollutants"). For health-related pollutants, emission standards and compliance schedules in State plans must ordinarily be at least as stringent as the corresponding emission guidelines and compliance times in EPA's guideline documents. As provided in Subpart B, States may apply less stringent requirements when economic factors or limitations make such application significantly more reasonable. For welfare-related pollutants, States may balance the emission guidelines, compliance times, and other information in EPA's guideline documents against factors of public concern in developing their plans, as explained more fully in the preamble to Subpart B and in the introductory portion of each guideline document. Thus, the States have more flexibility in establishing plans for welfare-related pollutants than is provided for plans involving pollutants that may affect public health.

For reasons discussed in the guideline document, the Administator has determined that atmospheric fluoride emissions in the primary aluminum industry may cause or contribute to endangerment of the public welfare (i.e., of livestock and vegetation), but that adverse effects on public health have not been demonstrated. This determination is consistent with the determination made in conjunction with the final guideline document for phosphate fertilizer plants which was made available on March 1, 1977 (42 FR 12022). As indicated above, this means that fluoride emissions will be considered a welfare-related pollutant and the States will have greater flexibility in developing their plans than would be the case if public health might be affected.

The emission guidelines and compliance times specified in the guideline document reflect the Administrator's judgment on: (1) the degree of emission reduction achievable through the application of the best system of continuous emission reduction which (taking into consideration the cost of achieving such emission reduction, and any nonair quality health and environmental impact and energy requirements) the Administrator determines has been adequately demonstrated for existing primary aluminum reduction plants; and (2) the time within which those systems can be purchased and installed.

Dated: April 7, 1980.

Douglas M. Costle.

Administrator.

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